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## Patent Claims:

1. Method for operating a synchronous machine (1) which comprises a permanently excited rotor and a stator provided with phase windings, in which the rotor position is determined,  
c h a r a c t e r i z e d in that for the correction of any possible angular error, with the synchronous machine (1) unloaded, at least one current and/or voltage vector having a defined duration is applied to the phase windings in the direction of the determined rotor position.
2. Method as claimed in claim 1,  
c h a r a c t e r i z e d in that the relative change of the rotor position is determined by means of a sensor element (5) synchronously with the application of the at least one voltage or current vector.
3. Method as claimed in claim 2,  
c h a r a c t e r i z e d in that the relative change is taken into consideration in an additional determination of the rotor position.
4. Method as claimed in any one of claims 1 to 3,  
c h a r a c t e r i z e d in that square-wave voltage pulses are applied to the phase windings when the rotor position is determined.
5. Method as claimed in claim 4,  
c h a r a c t e r i z e d in that any possible relative change of the rotor position is determined by

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means of a sensor element (5) synchronously with the application of the square-wave voltage pulses.

6. Method as claimed in claims 1 and 2,  
c h a r a c t e r i z e d in that additional current and/or voltage vectors in angles differing from the current rotor position are applied, and in that the indicator of the relative change of the rotor position is used as a criterion for judging the ease of motion (no-load condition) of the synchronous machine (1).
7. Method for operating a synchronous machine (1) comprising a permanently excited rotor and a stator provided with phase windings, which is connected to an actuation electronic unit (2) including a data memory (6) for rotor position values, and the rotor position value stored in the data memory (6) is read out,  
c h a r a c t e r i z e d in that for the purpose of correction of a possible angular error, with the synchronous machine (1) unloaded, at least one current and/or voltage vector with a defined duration is applied to the phase windings in the direction of the stored rotor position.
8. Method as claimed in claim 7,  
c h a r a c t e r i z e d in that prior to the reading out of the rotor position value stored in the data memory (6), a check is made whether the rotor was secured against rotation by means of an anti-rotation mechanism since the last storing of the rotor position value.

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9. Method as claimed in claim 7 or 8,  
c h a r a c t e r i z e d in that the relative change  
of the rotor position is determined by means of a  
sensor element (5) synchronously with the application  
of the at least one voltage or current vector, and in  
that the indicator of the relative change of the rotor  
position is used as a criterion for the quality of the  
stored rotor position values.
10. Method as claimed in any one of claims 1 to 9,  
c h a r a c t e r i z e d in that the current vector  
which develops due to the application of the voltage  
vector is determined by means of a current measuring  
device (4) and is used as a criterion for judging the  
condition of the electrical connections of the phase  
windings.